

A REVIEW OF THE *POLYRHACHIS VIEHMAYERI* SPECIES-GROUP  
(HYMENOPTERA: FORMICIDAE: FORMICINAE)

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Nine species of the *Polyrhachis viehmayeri* species-group are recognised, including *P. davydovi* Karawajew, *P. hirta* Viehmeyer and *P. viehmayeri* Emery and six new species: *P. bamaga*, *P. eremita*, *P. greenladei*, *P. loweryi*, *P. rustica* and *P. stigmatifera*. Lectotypes are designated for *P. davydovi* and *P. hirta*. A key to the species-group is provided. □Formicidae, *Polyrhachis*, *viehmayeri* species-group, systematics, distribution.

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The *Polyrhachis viehmayeri* species-group was delimited by Emery (1925) within the subgenus *Myrmhopla* Forel for two of its more unusual constituents: *P. hirta* Viehmeyer and *P. viehmayeri* Emery. A third species, *P. davydovi*, was added by Karawajew in 1927 and, since then, the composition of the species-group has remained unchanged. Subsequent systematic work has been hampered by the scarcity of research material because specimens of this rather distinct group are seldom collected and only a few have been taken in addition to the types.

My study has been possible because of recent collections, particularly those gathered by Dr P.J.M. Greenslade in the Solomon Islands, and Rev. B.B. Lowery in Australia and Papua New Guinea. Their collections are lodged in the Australian National Insect Collection and provided three of the new species, namely *P. greenladei*, *P. loweryi* and *P. rustica*. The material collected by Rev. Lowery also included the only known specimens of *P. viehmayeri* apart from the holotype. My collecting in northern Australia and Papua New Guinea has produced two more new species, *P. bamaga* and *P. eremita*, together with additional specimens of *P. greenladei* and *P. hirta*. Finally, two specimens located by Barry Bolton in the collections of the British Museum (Natural History) provided the unique holotype of *P. stigmatifera* sp.nov. and an additional paratype of *P. rustica* sp.nov.

The *P. viehmayeri* species-group ranges from Moluccas and Papua New Guinea to Guadalcanal in the Solomon Islands (09/159) and northern Australia, south to southern Queensland (lat. 26°). In the following, Australian and some

Melanesian records are given using 1-degree coordinates as initiated by Taylor (1987). The illustrations were prepared using a Zeiss (Oberkochen) SR Stereomicroscope with *camera lucida*. All figures depict the primary types. The measurements (in mm) and indices follow those of Kohout (1988): HL - maximum head length, measured from the anterior clypeal border to the occipital margin; HW - width of the head, measured immediately in front of the eyes; CI - cephalic index (HW x 100/HL); SL - length of the antennal scape, excluding the condyla; SI - scape index (SL x 100/HW); PW - width of the pronotal dorsum, measured at the bases of the pronotal spines; and MTL - maximum measurable length of the tibia of the hind leg.

Acronyms for museums and depositories are: ANIC - Australian National Insect Collection, CSIRO Division of Entomology, Canberra; BMNH - British Museum (Natural History), London, U.K.; BPBM - Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A.; IZAS - Institute of Zoology, Academy of Sciences, Kiev, U.S.S.R.; MCSN - Museo Civico di Storia Naturale 'Giacomo Doria', Genoa, Italy; MCZC - Museum of Comparative Zoology, Harvard University, Cambridge, Mass., U.S.A.; MHNG - Muséum d'Histoire Naturelle, Geneva, Switzerland; MNHU - Museum für Naturkunde, Humboldt-Universität, Berlin, D.D.R.; NMNH - National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A.; QMBA - Queensland Museum, South Brisbane; RJK - Rudolf J. Kohout, Brisbane (author's accessions and private collection data).

CHARACTERS OF THE *P. VIEHMEYERI*  
SPECIES-GROUP

The *P. viehmeyeri* species-group can be characterised within the genus *Polyrhachis* by the following combination of characters:

1. All dorsal surfaces of the body with bristle-like hairs, which are distinctly shorter than the maximum diameter of the eye.

2. Dorsa of head, mesosoma and petiole with characteristic vermiculate-rugose sculpturation.

3. Mesosomal dorsum bluntly marginate on each side along its entire length.

4. Pronotum and propodeum each armed with a pair of spines.

5. Pronotal spines flattened dorsally, with anterior and lateral margins acute; their length, direction and degree of elevation usually highly variable within species.

6. Pronotal and propodeal dorsa almost flat, mesonotal dorsum transversely convex with rounded lateral margins.

7. Node of petiole with more or less flat dorsum, bearing a pair of widely separated, diverging spines, and without intercalary spines or teeth.

8. Eyes strongly convex, almost hemispherical, with numerous short, erect hairs.

9. Mandibles very finely longitudinally striate.

10. Clypeus with anterior margin medially truncated; posterior margin usually deeply impressed.

11. Antennal carinae rather flat, widely separated.

KEY TO MEMBERS OF THE *P.*  
*VIEHMEYERI* SPECIES-GROUP BASED ON  
WORKER CASTE

1. Australian species with base of first gastral tergite finely micro-reticulate and more or less shiny; mandibles with 4 distinct teeth ..... 2

Indonesian, Melanesian or Australian species with base of first gastral tergite more or less closely, transversely striate and opaque; mandibles with 5 teeth, of which the basal tooth is often vestigial ..... 4

2. Larger species (HL>1.87); median ocellus well developed, distinct ..... 3

Smaller species (HL<1.78); median ocellus rather small, indistinct ..... *P. rustica*

3. Body bicoloured, medium reddish-brown with most of the head, pronotal collar and antero-median

patch on mesosomal dorsum light yellowish-brown; antennal scapes shorter (SI<144) ..... *P. eremita*

Body more or less uniformly coloured, dark reddish-brown with only the mandibles, spines and subpetiolar process slightly lighter; antennal scapes longer (SI>146) ..... *P. loweryi*

4. Inner surfaces of hind femora without erect hairs, or with only a few hairs at their proximal and distal ends; body dark reddish-brown ..... 5

All surfaces of hind femora with numerous erect hairs; body light to medium reddish-brown ..... 7

5. Metathoracic spiracles prominent, situated on laterally projecting tubercles .. *P. stigmatifera*

Metathoracic spiracles not prominent, more or less flat ..... 6

6. Sides of head between eyes and mandibular bases with numerous projecting short hairs ..... *P. greensladei*

Sides of head between eyes and mandibular bases without projecting short hairs (Fig. 4) ..... *P. bamaga*

7. Smaller species (HL 1.93); antennal scapes relatively short (SI 130)..... *P. davydovi*

Larger species (HL >2.00); antennal scapes longer (SI >135) ..... 8

8. Pronotal, propodeal and petiolar spines well elevated (Fig. 7); truncated median portion of anterior clypeal margin distinctly dentate laterally (Fig. 3)..... *P. viehmeyeri*

Pronotal, propodeal and petiolar spines scarcely elevated (Fig. 5); truncated median portion of anterior clypeal margin bluntly angulate laterally (Fig. 1) ..... *P. hirta*

*Polyrhachis bamaga* sp. nov.  
(Fig. 4)

MATERIAL EXAMINED

HOLOTYPE: AUSTRALIA: Queensland, Cape York Peninsula, Bamaga, 10°53'S, 142°23'E, 18 March 1987, RJK acc. 87.4 (worker). PARATYPES: data as for holotype (10 workers). Type deposition: Holotype in QMBA (type no. T 11123); 2 paratypes each in ANIC and RJK; 1 paratype each in BMNH, BPBM, MHNG, MCSN, MCZC and NMNH.

## WORKER

Dimensions (holotype cited first): TL 7.41, 7.11-8.01; HL 1.90, 1.84-1.96; HW 1.53, 1.50-1.62; CI 81, 79-83; SL 2.12, 2.03-2.25; SI 139, 134-142; PW 0.75, 0.72-0.81; MTL 2.74, 2.62-2.90 (11 measured).

Clypeus in profile distinctly sinuate, with the base deeply impressed; median carina feebly marked anteriorly, indistinct posteriorly; truncated median portion of anterior margin dentate laterally. Ocelli lacking. Pronotum with anteriorly converging lateral margins, bearing a pair of antero-lateral, more or less horizontal spines. Propodeal spines well elevated, moderately divergent, slightly sinuate in lateral view. Dorsum of petiole flat, anterior and posterior margins well defined, spines well elevated, widely divergent.

Clypeus with fine, V-shaped rugae, extending to the frontal area of head; sculptural intensity increasing posteriorly, so that dorsa of head and mesosoma are coarsely vermiculate-rugose; propodeal declivity and dorsum of petiole transversely rugose. Sculptural intensity distinctly less coarse laterally, with sides of mesosoma and petiole only weakly rugose. Propodeal spines smooth and shiny, with only microscopic reticulation. Basal half of first gastral tergite very finely and regularly, transversely striate, opaque.

Brown, bristle-like hairs longest and most dense on gaster, only slightly shorter and more dilute on dorsa of head and mesosoma. Hairs almost completely absent from sides of head between eyes and mandibular bases, dorsal surfaces of front and middle femora and tibiae, and dorsal and inner surfaces of hind femora. Golden, relatively short, appressed pubescence very sporadic on dorsum of body except gaster, where it is rather abundant.

Very dark reddish-brown; sides of mesosoma and petiole, spines and appendages a shade lighter.

Sexuals and immature stages unknown.

## REMARKS

The eleven specimens of the *P. bamaga* type-series were collected on the edge of riverine lowland rainforest at Bamaga (Grid cell 10/142), near the tip of Cape York Peninsula. This species shares characteristic features with *P. viehmeyeri*-group species from the Solomons, New Guinea and Indonesia, including 5-dentate mandibles and an opaque first gastral tergite. In contrast, the more southern Australian members of the group (*P. eremita*, *P. loweryi* and *P. rustica*) possess

4-dentate mandibles and have more or less shiny gasters.

At the time of collection the site was inundated following torrential rain and the ants were running in disarray over low vegetation and flood debris in company with *Polyrhachis paxilla* Fr. Smith, a species of similar appearance and with almost identical vermiculate-rugose sculpturation. Despite repeated visits over following days no other *P. bamaga* specimens could be found.

*Polyrhachis davydovi* Karawajew, 1927  
(Figs 2, 6)

*Polyrhachis (Myrmhopla) davydovi* Karawajew, 1927:24. Syntype workers. Type locality: INDONESIA, Aru Is., Wammar (= Wamar I., Kepulauan Aru) (05/134), 19 iii 1913, Karawajew, Nr.2746, IZAS (1 syntype examined).

## LECTOTYPE DESIGNATION

I have examined one of two syntypes comprising the *P. davydovi* type series, kindly loaned by Dr A.G. Radchenko of the Zoological Institute, Ukrainian Academy of Sciences, Kiev. The specimen is in good condition and, besides the orange tag reading *davydovi* (sic), which is glued directly to the card triangle with the specimen, it bears three additional labels of which two are apparently in Karawajew's handwriting and read as follows: 'Wammar, Aru. 2746, Karavaiev'; '*Polyrhachis (Myrmhopla) davydovi* Karav. Typus'. The third label (on a red tag) reads: 'Holotypus ♀ *Polyrhachis (Myrmhopla) davydovi* Karawajew'. Despite the specimen being labelled 'Holotype', Karawajew's original description clearly indicates that both specimens are of equal value and thus syntypes. I designate the specimen I have examined as lectotype and, consequently, the second specimen is a paralectotype.

Dimensions of lectotype: TL 7.91; HL 1.93; HW 1.56; CI 81; SL 2.03; SI 130; PW 0.81; MTL 2.90.

## WORKER

Clypeus in profile almost straight, with moderately impressed basal margin; median carina vague; truncated median portion of anterior margin obtuse laterally. Ocelli lacking (a shallow depression in the cephalic sculpturation indicates the relative position of the median ocellus). Pronotum with anteriorly converging lateral margins, bearing a pair of antero-laterally projecting, well elevated spines. Propodeal

spines well elevated, subparallel, almost straight in lateral view. Dorsum of petiole convex, anterior and posterior margins ill defined; spines moderately elevated, widely divergent.

Fine, mostly V-shaped rugae, on clypeus and frontal area of head. Sculptural intensity increasing dorsally and posteriorly, with dorsum of head and mesosoma vermiculate-rugose; the pattern tends to be less coarse laterally, with sides of mesosoma only weakly rugose. Dorsum of petiole with rather fine, somewhat transverse, but mostly irregular rugulations. Base of first gastral tergite very finely, mostly transversely striate, opaque.

Yellow and reddish-brown, bristle-like hairs dense on head and gaster, but rather sporadic on dorsa of mesosoma and petiole. Mostly silvery, appressed pubescence fairly sparse everywhere, except the gastral dorsum, where it is longer and golden-yellow, with a distinct reddish-tint.

Medium reddish-brown; dorsum of mesosoma and sides of mesonotum and propodeum a shade darker. Mandibles, clypeus, antennal carinae and posterior margins of gastral tergites bordered dark brown.

Sexuals and immature stages unknown.

#### REMARKS

*P. davydovi* closely resembles *P. hirta* and *P. viehmeyeri*, and is undoubtedly closely related to both. Besides the characters given in the key, it differs from *viehmeyeri* in having the truncated portion of the anterior clypeal margin bluntly terminated laterally, and the propodeal and petiolar spines distinctly shorter. From *hirta* it differs in having the propodeal spines distinctly shorter and well elevated, and the petiolar spines more widely divergent. The anterior margin of the petiolar dorsum in *davydovi* is blunt and indistinct (Fig. 6), while it is clearly defined or even dorsally produced in the other two species (Figs 5, 7). Also, the bristle-like hairs in *P. davydovi* are much shorter and more dilute than in *P. hirta* and *P. viehmeyeri*.

#### *Polyrhachis eremita* sp. nov.

##### MATERIAL EXAMINED

**HOLOTYPE.** AUSTRALIA, Queensland, c. 4-10 km N of Marlborough, 22°45'S, 149°54'E, 9 April 1981, RJK acc. 81.51 (worker). **PARATYPES** data as for holotype (8 workers). Type deposition: Holotype in QMBA (type no. T 11124); 2 paratypes each in ANIC and RJK, 1 paratype each in BMNH, MUNG, MCSN and MCZC.

##### WORKER

Dimensions (holotype cited first): TL 7.66, 7.66-8.72; HL 1.92, 1.87-2.03; HW 1.61, 1.56-1.70; CI 84, 82-85; SL 2.28, 2.21-2.43; SI 142, 141-144; PW 0.87, 0.81-0.91; MTI 3.00, 2.97-3.22 (9 measured).

Clypeus in profile almost straight, with posterior margin moderately impressed; median carina rather smooth and shiny for most of its length; truncated median portion of anterior margin obtuse laterally. Median ocellus distinct; lateral ocelli lacking (their relative location marked by shallow depressions in cephalic sculpturation). Pronotal dorsum narrowed anteriorly, bearing a pair of slender, well elevated, short to medium long, often asymmetrical spines (see below under remarks on *P. rustica*). Propodeum flat, bearing a pair of straight, well elevated, moderately divergent spines. Petiole with posteriorly sloping dorsum, which is more or less concave between divergent, well elevated spines.

Clypeus and front of head with fine, more or less longitudinal rugae, sculptural intensity increasing posteriorly to vermiculate-rugose on dorsum of head and occipital border. Dorsa of mesosoma and petiole vermiculate-rugose; sculptural intensity decreasing laterally to weakly rugose. Propodeal spines, besides a few piliferous pits at their bases, highly polished. First gastral tergite finely, microscopically reticulate, more or less shiny.

Short, yellowish to reddish-brown, bristle-like hairs most dense on head and gaster, rather dilute on dorsa of mesosoma and petiole. Short, appressed pubescence very sporadic everywhere, save for the gaster, where it is rather abundant, ranging from reddish-golden dorsally to silvery on lateral and ventral surfaces.

Distinctly bicoloured; head mostly light reddish-brown with mandibles, clypeus, antennal carinae, median ocellus and the lateral ocellar depressions, narrowly bordered very dark brown; occipital border dark brown. Dorsa of mesosoma and petiole dark reddish-brown, except the pronotal collar, antero-median patch on mesonotal dorsum, propodeal spines, and sides of mesosoma and petiole, which are yellowish to light reddish-brown. Gaster reddish-brown, its base widely diffused yellowish-brown. Posterior margins of tergites and sternites widely bordered very dark brown. Appendages reddish-brown.

Sexuals and immature stages unknown.

## REMARKS

The type-series of *P. eremita* was collected in open sclerophyll forest at the base of Pine Mountain, near Marlborough, CQ (Grid cell 22/149). The ground had been disturbed, possibly by recent logging activities, and the immediate surface of the forest floor was badly ravaged. A few ants were observed running in disarray, together with a similarly coloured unidentified species of *Rhytidoponera* Mayr (Ponerinae). Some specimens were found dead and damaged. Subsequent visits to the area in following years failed to produce further specimens of *P. eremita*.

*Polyrhachis greensladei* sp. nov.

## MATERIAL EXAMINED

HOLOTYPE: SOLOMON IS.: Guadalcanal Prov., Mt Austen, 10 v - 28 vi 1965, P.J.M. Greenslade (worker). PARATYPES: data as for holotype, 5 x 1965, P.J.M. Greenslade (1 dealate female); data as for holotype, 5 vii 1984, RJK acc. 84 1 (1 worker); Central Prov., Savo I., 5 viii 1963, P.J.M. Greenslade (1 worker). PAPUA NEW GUINEA (PNG): New Ireland Prov., Lelet Plateau, 800-1000 m. c. 03°20'S, 151°56'E. 19-24 vii 1984, RJK acc. 84.93 (worker). Type deposition: Holotype in ANIC (type no. 7732); 1 paratype (dealate female) in ANIC; 1 paratype (worker) in BMNH; 2 paratypes (workers) in RJK.

## WORKER

Dimensions (holotype cited first): TL 7.86, 7.81-8.77; HL 2.00, 1.96-2.15; HW 1.61, 1.59-1.73; CI 81, 80-82; SL 2.15, 2.15-2.34; SI 134, 133-135; PW 0.84, 0.87-0.94; MTL 2.97, 2.97-3.28 (4 measured).

Clypeus of holotype in profile almost straight, but rather distinctly sinuate in some paratypes, with posterior margin deeply impressed; median longitudinal carina feebly marked anteriorly, indistinct posteriorly; truncated median portion of anterior margin distinctly dentate laterally. Ocelli lacking. Pronotal dorsum with sides subparallel; spines moderately long, scarcely elevated. Propodeal suture more or less marked by a shallow transverse depression. Dorsum of propodeum straight in profile, spines well elevated, moderately divergent, with tips gently turned outwards in dorsal view. Dorsum of petiole flat, sloping posteriorly, with distinct anterior margin; spines relatively long, well elevated, widely divergent.

Clypeus, front and sides of head with irregular, mostly longitudinal rugae; sculptural intensity increasing posteriorly, so that the dorsum of head is rather coarsely vermiculate-rugose. Dorsa of

mesosoma and petiole vermiculate-rugose; sculpturation markedly more fine laterally. Propodeal spines smooth and polished, petiolar spines with a few longitudinal rugae. First gastral tergite basally with more or less regular transverse striations, opaque.

Brown, bristle-like hairs abundant on head and gaster, only slightly less dense on dorsa of mesosoma and petiole. The rather dilute, whitish pubescence has a somewhat reddish tint on the dorsal aspect of gaster.

Very dark brown; clypeus, sides of head, mesosoma, petiole and appendages a shade lighter. Mandibles reddish-brown, bordered very dark brown.

## FEMALE

Dimensions: TL 9.17; HL 2.03; HW 1.62; CI 80; SL 2.28; SI 141; PW 1.71; MTL 2.97 (1 measured).

The female differs from the worker in the usual characters identifying full sexuality, including three ocelli, complete thoracic structure and wings. The sculpturation, pilosity and colour is essentially that of the worker, and only the configuration of spines is different. The pronotal spines are reduced to pair of minute denticles; the propodeal spines are distinctly shorter than in the worker, almost horizontal in lateral view, and divergent. The petiolar spines are similar to those of worker, but markedly shorter.

Male and immature stages unknown.

## REMARKS

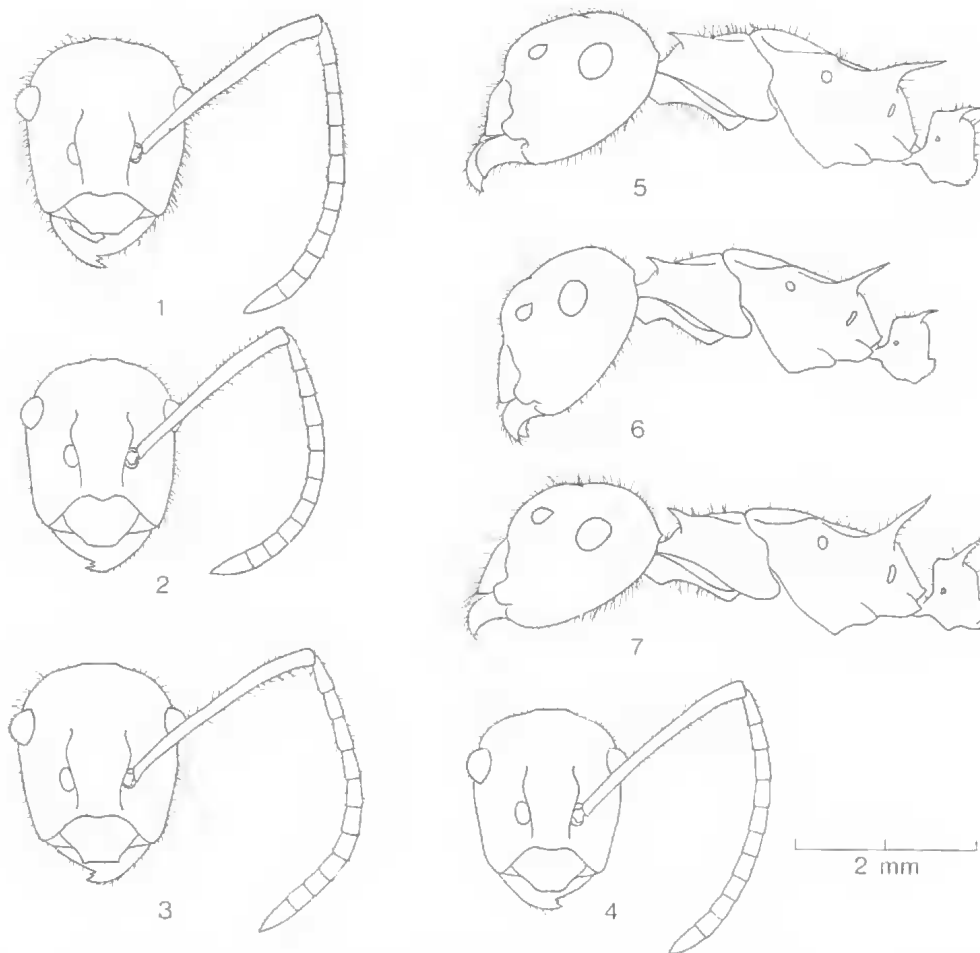
The known distribution of *P. greensladei* is from the Bismarek Archipelago in Papua New Guinea to Guadalcanal in the Solomon Islands (Grid cells 3/151, 9/159, 9/160). The locality data label under the holotype states that the specimen was taken in a carrion trap. The single specimen from New Ireland was collected dead on a narrow path winding through low dense fern thicket, which is typical of parts of the Lelet Plateau.

*Polyrhachis hirta* Viehmeier, 1913  
(Figs 1, 5)

*Polyrhachis hirta* Viehmeier, 1913:59. Syntype workers. Type locality: NEW GUINEA, Wareo (Madang Prov., PNG) (06/147), MNHU (1 syntype examined).

## LECTOTYPE DESIGNATION

I have examined one syntype of *P. hirta*, kindly loaned by Dr Frank Koch of the Museum für



FIGS 1 - 4. Head in full face view (right antenna omitted): 1 - *P. hirta*; 2 - *davydovi*; 3 - *viehmeyeri*; 4 - *bamaga*.  
 FIGS 5 - 7. Lateral view (antennae, legs and gaster omitted): 5 - *P. hirta*; 6 - *davydovi*; 7 - *viehmeyeri*.

Naturkunde, Humboldt-Universität, Berlin. The specimen is in a fair condition and bears six labels as follows: 'Warco, D. Neuguinea', 'Typus' (on red tag), 'Coll. Viehm.', 'Zool. Mus. Berlin', 'Syntype' (round label) and '*hirta* Viehm., det. B. Bolton, 1973'. This specimen is here designated lectotype of *P. hirta*, and has been so labelled.

Dimensions of lectotype: TL 8.16; HL 2.03; HW 1.65; CI 81; SL 2.28; SI 138; PW 0.87; MTL 3.22.

#### ADDITIONAL MATERIAL EXAMINED

PAPUA NEW GUINEA: Northern Prov., Managalese Plateau, c. 09°05'S, 148°26'E, S of Popondetta, July 1964, R. Pullen (1 worker); Pongani Riv., c. 500 m,

Boikiki Plantation, c. 8 km NNE Afore, 09°06'S, 148°25'E, 29-30 viii 1984, RJK acc. 84.386 (4 workers); Morobe Prov., Buloto (07/146), 2300 ft, 3 January 1968, B.B. Lowery (7 workers, 1 dealate female).

#### WORKER

Dimensions: TL 7.76-8.92; HL 1.96-2.18; HW 1.59-1.75; CI 78-81; SL 2.15-2.43; SI 135-139; PW 0.79-0.90; MTL 3.02-3.38 (12 measured).

Clypeus in profile almost straight, with basal margin deeply impressed; median longitudinal carina vague; truncated median portion of anterior margin bluntly angulate laterally. Ocelli lacking. Pronotal dorsum with lateral margins subparallel, bearing a pair of barely elevated,

often asymmetrical spines (including those of lectotype). Propodeal spines only weakly elevated, somewhat divergent. Petiolar dorsum sloping posteriorly, almost flat, with anterior margin distinct or even dorsally produced in some specimens; spines only weakly elevated, divergent.

Clypeus with fine, mostly V-shaped rugae, extending to sides and frontal areas of head; sculptural intensity increasing dorsally and posteriorly, with dorsa of head and mesosoma vermiculate-rugose, and decreasing laterally, with sides of mesosoma and petiole less coarsely, somewhat irregularly, rugose. Base of first gastral tergite finely, mostly transversely, striate, opaque.

Short, reddish-brown or yellowish, bristle-like hairs on all dorsal surfaces of body, most dense on head and gaster. White to silvery, appressed pubescence very sparse, except on gastral dorsum, where it is more abundant and yellow, with a distinct reddish tint.

Medium reddish-brown, mandibles, propodeal and petiolar spines a shade lighter. Mandibles, antennal earinae and lateral margins of mesosoma narrowly and posterior margins of gastral tergites more widely, bordered dark brown. Appendages reddish-brown.

#### FEMALE

Dimensions: TL 9.22; HL 2.03; HW 1.57; CI 77; SL 2.28; SI 145; PW 1.72; MTL 3.17 (1 measured).

The single available female closely resembles the worker and, besides the usual characters identifying full sexuality, differs only in the configuration of the spines. The pronotal spines are reduced to minute denticles. The propodeal spines are relatively short with tips curved gently outwards: in lateral view the spines are horizontal at their bases and then gently downturned. Petiolar spines are rather short, widely divergent. Male and immature stages unknown.

#### REMARKS

I have directly compared the lectotype of *P. hirta* Viehmeyer with the holotype of *P. viehmeyeri* Emery and other available material. Despite certain similarities of the specimens, I am confident that each name designates separate and valid species.

#### *Polyrhachis loweryi* sp.nov.

#### MATERIAL EXAMINED

HOLOTYPE: AUSTRALIA: Queensland, Miles, 20 viii 1975, B.B. Lowery (worker).

PARATYPES: data as for holotype (4 workers). Type deposition: Holotype in ANIC (type no. 7733); 1 paratype each in BMNH, MCZC, OMBA and RJK.

#### WORKER

Dimensions (holotype cited first): TL 8.26, 8.26-8.77; HL 2.03, 1.93-2.00; HW 1.65, 1.56-1.65; CI 81, 81-84; SL 2.46, 2.31-2.46; SI 149, 145-152; PW 0.94, 0.87-0.94; MTL 3.28, 3.12-3.33 (5 measured).

Clypeus in profile almost straight with the base moderately impressed; median carina rather blunt, frequently interrupted throughout its length; truncated median portion of anterior margin obtuse laterally. Median ocellus distinct, lateral ocelli lacking (their relative position marked by shallow depressions in the cephalic sculpturation). Pronotal dorsum with sides converging anteriorly; spines well elevated, long and slender. Propodeal suture marked by a shallow transverse depression. Propodeal spines only moderately elevated, subparallel. Dorsum of petiole widely concave between well elevated, relatively long, divergent spines.

Clypeus and front of head finely, mostly longitudinally, striate-rugose; sides irregularly rugose. Dorsa of head, mesosoma and petiole vermiculate-rugose, with sides distinctly less rugose than dorsum; propodeal declivity transversely rugose. First gastral tergite very shallowly micro-reticulate, more or less shiny.

Light to dark brown, bristle-like hairs, most dense on head and gaster, rather dilute on dorsa of mesosoma and petiole. Silvery, appressed pubescence, very scarce everywhere except on gaster, where it is abundant with distinctly reddish tint dorsally.

Very dark reddish-brown, with only mandibles (except their masticatory borders), spines and petiole below spiracles, a shade lighter.

Sexuals and immature stages unknown.

#### REMARKS

The type-series was collected in dry sandy sclerophyll forest with *Callitris*, near Miles in southern Queensland (Grid cell 26/150). Lowery's original data label states that the specimens were 'found only in galleries of common large species of *Rhytidoponera*'.

#### *Polyrhachis rustica* sp.nov.

#### MATERIAL EXAMINED

HOLOTYPE: AUSTRALIA: Queensland, 4 km N of Collinsville (20/147), savannah woodland, 24 v 1981, B.B. Lowery (worker)

PARATYPES: data as for holotype (1 dealate female). AUSTRALIA. Queensland, Mareeba, Chico(?) Rd. (17/145), 17 vi 1961, L.H. Weatherill (B.M. 1966-163) (worker). Type deposition: Holotype (type no. 7735) and 1 paratype (dealtate female) in ANIC; 1 paratype (worker) in BMNH.

#### WORKER

Dimensions (holotype cited first): TL 7.16, 7.00; HL 1.78, 1.75; HW 1.47, 1.43; CI 83, 82; SL 2.15, 2.00; SI 146, 140; PW 0.81, 0.80; MTL 2.84, 2.68 (2 measured).

Clypeus in profile almost straight with rather shallowly impressed posterior margin; median longitudinal carina poorly marked, except for a short, clearly defined anterior section; truncated median portion of anterior margin obtuse laterally. Median ocellus vestigial; lateral ocelli lacking. Pronotal dorsum narrowed anteriorly, bearing a pair of well elevated spines, which are rather short and triangular in the holotype, and distinctly longer and more slender in the paratype. Propodeal suture distinct laterally, rather obsolete medially. Propodeal spines scarcely elevated, subparallel. Dorsum of petiole with more or less distinct anterior margin, bearing a pair of somewhat divergent, gently curved spines.

Clypeus and front of head with line, more or less longitudinal rugosity. Sculptural intensity increasing dorsally and posteriorly, so that the dorsa of head, mesosoma and petiole are mostly vermiculate-rugose. Sculpturation distinctly less intense laterally, with sides of mesosoma and petiole somewhat reticulate-rugose. Dorsum of first gastral tergite very finely, microscopically reticulate, shiny.

Very short brown to yellowish bristle-like hairs rather scarce on dorsa of mesosoma and petiole, more numerous on head and gaster. Short, appressed, silvery pubescence sporadic over most of the body, except the gastral dorsum, where it is more abundant, with a distinct, reddish-golden tint.

Dark reddish-brown with dorsum and sides of mesosoma and petiole infuscated medium reddish-brown. Dorsum of gaster medium reddish-brown with posterior margins of tergites widely bordered dark brown.

#### FEMALE

Dimensions: TL 8.97; HL 1.90; HW 1.56; CI 82; SL 2.37; SI 152; PW 1.76; MTL 3.22 (1 measured).

Very similar to worker and, besides the obvious characters identifying full sexuality, with

the following differences: pronotal spines reduced to triangular, somewhat dorso-ventrally flattened teeth which, in direct comparison to those in other known *viehmeyeri* species-group females, are distinctly longer; propodeal spines relatively short, their length equal to about half the distance between their bases; petiolar dorsum concave between short, widely divergent, well elevated spines, the anterior petiolar margin rather blunt, posterior margin indistinct. Colour brownish-black; mandibles medium reddish-brown with masticatory borders narrowly bordered very dark brown. Sides of head at mandibular bases, sides of mesosoma, petiole and gastral tergites and sternites infuscated medium reddish-brown. Appendages medium reddish-brown, tarsi a shade lighter.

Male and immature stages unknown.

#### REMARKS

*P. rustica* is similar to *P. eremita*. It shares with that species a number of characteristics, including an almost identical clypeal outline, with distinct median carina. The colour scheme of the mesosoma and gaster is similar. Besides the characters given in the key, it differs from *eremita* in the colour of the head which is uniformly dark reddish-brown in *P. rustica*, but conspicuously bicoloured in *P. eremita*. Also, the petiole in lateral view is distinctly higher and more slender in *P. rustica*.

The holotype and paratype worker of *P. rustica* were collected from relatively distant localities but, besides the marked differences in the length of pronotal spines, they are closely comparable and undoubtedly conspecific. The variability in the length, elevation and orientation of the pronotal spines is a peculiar character exhibited to some degree by all known *viehmeyeri*-group species. I examined many individuals (including types) with the pronotal spines asymmetrical. Although morphologically interesting, this variability seems to be random, and is apparently of no taxonomic value.

Like some other species of the group (*eremita*, *loweryi* and *viehmeyeri*), *P. rustica* seems to be closely associated in the field with ants of the genus *Rhytidoponera*. Lowery's original label states that the specimens (holotype and paratype female) were collected 'under same rock as large *Rhytidoponera*'. Also the specimen sent by Barry Bolton was apparently collected in association with ants of that genus, since the BMNH register for 1966-163 states '315 *Rhytidoponera* Australia...'.



*Polyrhachis stigmatifera* sp. nov.

## MATERIAL EXAMINED

HOLOTYPE: INDONESIA: Seram, Solea, viii 1987, M.C. Day (worker). Type deposition: Unique holotype in BMNH.

## WORKER

Dimensions: TL 8.06; HL 2.00; HW 1.59; CI 79; SL 2.25; SI 141; PW 0.78; MTL 2.96.

Clypeus in profile straight, with basal margin deeply impressed; medial longitudinal carina rather acute anteriorly, somewhat less distinct posteriorly; truncated median portion of anterior margin dentate laterally. Ocelli lacking. Pronotal dorsum narrowed anteriorly, bearing a pair of weakly elevated, asymmetrical spines (right spine on the unique holotype is long and slender, while the left spine is distinctly shorter and more triangular). Metathoracic spiracles situated on prominent, laterally projecting tubercles. Propodeum bearing a pair of moderately elevated spines. Petiolar spines scarcely elevated, widely divergent.

Clypeus with fine, more or less V-shaped rugae, continuous over frontal area of head. Sculptural intensity increasing posteriorly, with dorsa of head, mesosoma and petiole vermiculate-rugose, and decreasing laterally with sides only irregularly rugose. Propodeal and petiolar spines smooth and shiny, save for a few transverse rugae at their bases. First gastral tergite opaque; the base somewhat striate-rugose laterally, with sculpturation distinctly less regular dorsally and posteriorly.

Rather short yellow to reddish-brown, bristle-like hairs very sparse everywhere, save on the gaster, where they are longer and more abundant. Short silvery to golden appressed pubescence very dilute over most of body, except gaster, where the hairs are longer, with a distinct reddish tint on the dorsal aspect.

Dark reddish-brown, lateral portions of head a shade lighter. Mandibles reddish-brown, with masticatory borders narrowly bordered dark brown. Appendages and tips of spines medium reddish-brown.

Sexuals and immature stages unknown.

## REMARKS

*P. stigmatifera* is only the second species of the *P. viehmeyeri* species-group known from Indonesia (the other is *P. davydovi*). Besides the prominent metathoracic spiracles, it is easily separable from *davydovi* by the anterior section

of the median clypeal carina which forms rather acute ridge; the petiolar dorsum with well defined anterior margin; and the generally dark colour of the body. In contrast, the clypeus in *P. davydovi* is almost flat with the median carina vague; the anterior margin of the petiolar dorsum is ill defined; and general coloration distinctly lighter.

*Polyrhachis viehmeyeri* Emery, 1921  
(Figs 3, 7)

*Polyrhachis (Myrmhopla) viehmeyeri* Emery, 1921:19. Holotype worker. NE NEW GUINEA, MCSN (Examined).

Dimensions of holotype: TL 8.77; HL 2.06; HW 1.65; CI 80; SL 2.31; SI 140; PW 0.86; MTL 3.22.

## ADDITIONAL MATERIAL EXAMINED

PAPUA NEW GUINEA: Morobe Prov., Bupu Riv., Lae (06/146), 6 January 1968, B.B. Lowery (47 workers, 2 alate females, 4 males); Northern Prov., Kokoda (08/147), 1100', 17 January 1971, B.B. Lowery (1 worker).

## WORKER

Dimensions: TL 7.46-8.52; HL 1.90-2.15; HW 1.57-1.78; CI 81-84; SL 2.18-2.34; SI 130-141; PW 0.75-0.94; MTL 2.92-3.28 (21 measured).

Clypeus in profile almost straight, with well impressed posterior margin; median longitudinal carina vague; truncated median portion of anterior margin distinctly dentate laterally. Ocelli generally lacking, but in some specimens a vestigial median ocellus is evident. Pronotal dorsum narrowed anteriorly, bearing a pair of well elevated, long, slender spines. Propodeal spines well elevated, subparallel, somewhat divergent in some specimens. Dorsum of petiole with clearly defined anterior margin and well elevated, long, slender spines.

Clypeus with fine, somewhat longitudinal rugae, extending to the frontal areas and sides of head. Sculptural intensity increasing dorsally and posteriorly, so that the dorsa of head, mesosoma and petiole are vermiculate-rugose. Sculpturation is more fine laterally, with the sides of the mesosoma and petiole only reticulate-rugose. Base of first gastral tergite finely, more or less transversely striate, opaque.

Mostly reddish-brown, bristle-like hairs abundant over most of body. Silvery appressed pubescence very sparse, save for the gastral dorsum, where it is more abundant and somewhat yellow with a reddish tint.

Light to medium reddish-brown, dorsa of head

and mesosoma a shade darker. Mandibles, anterior clypeal margin and antennal carinae narrowly bordered dark brown.

#### FEMALE

Dimensions: TL 8.47-8.87; HL 1.93-2.06; HW 1.53-1.62; CI 79; SL 2.06-2.15; S1 133-135; PW 1.75-1.81; MTL 2.72-2.92 (2 measured).

The female is very similar to the worker, with almost identical sculpturation and colour. Besides the characters identifying full sexuality it differs only in the length of the mesosomal spines: pronotal spines reduced to minute denticles; propodeals short, subparallel, and almost horizontal in lateral view. The petiolar spines are similar to those of the worker, except shorter. The female of *P. viehmeyeri* is distinguishable from that of the closely related *P. hirta*, and from other known females of the *viehmeyeri* species-group, by its relatively wide mesoscutum, which is as wide, or even wider than long. In comparison, the mesoscutum of *hirta*, *greensladei* and *rustica* is distinctly more narrow, being longer than wide. The mesoscutum in *P. viehmeyeri* is also somewhat concave posteriorly, when viewed from the side; it is almost straight in all other species.

Males and immature stages in ANIC.

#### REMARKS

I have examined and directly compared the unique holotype of *P. viehmeyeri* with numerous specimens collected by Rev. Lowery. They matched the holotype closely. The main characters separating this species from the closely related *P. hirta* and other species of the group are given in the key and in the discussion under *P. davydovi* and *P. hirta*.

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#### LITERATURE CITED

- EMERY, C. 1921. Le genre *Polyrhachis*. Classification: espèces nouvelles ou critiques. *Bulletin de la Société vaudoise des sciences naturelles*. Lausanne 54:17-25.
1925. Hymenoptera. Fam. Formicidae, Subfam. Formicinae in Wytman (Ed.) *Genera Insectorum* fasc. 183, 302 pp., 4 pls. Bruxelles.
- FOREL, A. 1915. Results of Dr E. Mjöberg's Swedish Scientific Expeditions to Australia 1910-1913. 2. Ameisen. *Arkiv för Zoologi* 9:1-119, pls 1-3.
- KARAWAJEW, W. 1927. Ameisen aus dem Indo-Australischen Gebiet. *Travaux du Musée zoologique de l'Académie des sciences de l'Ukraine*. Kiev 3:3-52, 21 figs.
- KOHOUT, R.J. 1988. A new species of *Polyrhachis* (*Polyrhachis*) from Papua New Guinea with a review of the New Guinean and Australian species. *Memoirs of the Queensland Museum* 25(2): 417-427.
- TAYLOR, R.W. 1987. A Checklist of the Ants of Australia, New Caledonia and New Zealand (Hym.: Formicidae). *CSIRO Australia. Division of Entomology Report No. 41*:1-92.
- TAYLOR, R.W. AND BROWN, D.R. 1985. Hymenoptera: Formicoidea in *Zoological Catalogue of Australia* 2:1-149, 306-348.
- VIEHMEYER, H. 1913. Neue und unvollständig bekannte Ameisen der Alien Welt. *Archiv für Naturgeschichte*. Berlin 79A:24-60.